

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Jeffery N. Gleason

Serial No.: 10/690,319

Filed: October 20, 2003

For: INTERMEDIATE
SEMICONDUCTOR DEVICE
STRUCTURE (as amended)

Confirmation No.: 1135

Examiner: H. Trinh

Group Art Unit: 2814

Attorney Docket No.: 2269-5157.1US
(01-1004.01/US)

VIA ELECTRONIC FILING

November 16, 2007

PRE-APPEAL BRIEF

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Pre-Appeal Brief is filed in response to the Examiner's remarks in the Final Office Action ("Final Office Action") mailed August 16, 2007, and the Advisory Action ("Advisory Action") mailed November 2, 2007. This Pre-Appeal Brief is being submitted in accordance with the requirements of the Pre-Appeal Brief Conference Pilot Program (*see* 1296 Off. Gaz. Pat. Office 67, July 12, 2005) and is being submitted concurrently with a Notice of Appeal and a Pre-Appeal Brief Request for Review.

REMARKS

Claims 1 through 8 are currently pending in the application and stand rejected. Appellant submits that there are clear errors in the rejections of the pending claims and that the Examiner has omitted one or more essential elements needed for a *prima facie* rejection.

Claims 1 and 3 through 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,699,395 to Boleky (“Boleky”). Claim 2 is rejected under 35 U.S.C. § 102(b) as being anticipated by Boleky or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Boleky. The pending claims are directed, generally, to an intermediate structure of a semiconductor device.

Boleky is as summarized on p. 4 of Appellant’s Response filed on October 16, 2007 (“Appellant’s Response”). Appellant respectfully submits that Boleky does not describe, either expressly or inherently, each and every element of claims 1 and 3 through 8, as explained on p. 5 of Appellant’s Response. The Examiner alleges that the element of “an exposed metal structure,” as recited in claim 1, is present in FIG. 1 of Boleky as strip 18. However, Boleky discloses that strip 18 is “an elongated strip 18 of a semiconductor material . . . [comprising] N conductivity type silicon.” Boleky at column 2, lines 21-22 (emphasis added). However, since silicon is a semiconductive material, strip 18 of Boleky is not “an exposed metal structure,” as recited in claim 1.

The Examiner asserts that “silicon in the art may be considered as a metal” and relies on column 17, lines 1-2 of United States Patent No. 6,008,124 to Sekiguchi *et al.* (“Sekiguchi”) in support of this assertion. Final Office Action, p. 4 and Advisory Action, p. 1. As an initial matter, Appellant notes that Sekiguchi does not appear to be of record in the above-mentioned case. The relied-upon section of Sekiguchi states that “the effect of the present invention can be expected as long as formation conditions capable of forming a barrier compound layer of a compound of nitrogen, oxygen, metal such as titanium and silicon, are used.” Sekiguchi at column 16, line 66 through column 7, line 2 (emphasis added). The Examiner alleges that the phrase “metal such as titanium and silicon” provides support for the assertion that silicon is a metal. As best understood, the Examiner’s interpretation of this phrase appears to be that titanium and silicon are two examples of metals. However, as explained below, when Sekiguchi

is viewed in its entirety, it is evident that the Examiner's interpretation is inconsistent with other portions of Sekiguchi.

In addition to the relied-upon section of Sekiguchi, Sekiguchi describes the barrier compound layer more than twenty times. In each of these instances, the barrier compound layer is described as being composed of a compound of four elements: nitrogen, oxygen, a metal, and silicon. Specifically, Sekiguchi describes the barrier compound layer as being "composed of a compound of nitrogen, oxygen, metal and silicon," "composed of a compound of nitrogen, oxygen, titanium and silicon," "composed of a nitrogen-oxide-metal-silicon compound," "composed of a nitrogen-oxygen-first metal-silicon compound," "composed of a nitrogen-oxygen-titanium-silicon compound," "composed of a nitrogen-oxygen-cobalt-silicon compound," "composed of a N-O-Ti-Si compound," and "composed of a N-O-Co-Si compound." See Sekiguchi at the Abstract; column 8, lines 26, 27, 61, and 62; column 9, lines 13 and 14; column 10, lines 24, 25, 30, and 31; column 11, lines 6, 7, 57, and 58; column 12, lines 19 and 34; column 13, line 18; column 14, lines 21, 46, and 47; column 15, lines 29 and 30; column 16, lines 14 and 15; column 17, lines 38, 39, 43, 44, 49, 50, 54, and 55; column 18, lines 9, 10, 16, and 17; and claim 1.

Based on these descriptions, it is clear that the barrier compound layer of Sekiguchi is composed of a compound of nitrogen, oxygen, a metal (*i.e.*, titanium or cobalt), and silicon. Therefore, the Examiner's reliance on the phrase "metal such as titanium and silicon" in support of the assertion that silicon is a metal is clearly erroneous. Rather, this phrase describes that a metal (*i.e.*, titanium) and silicon are two of the four elements of the compound used as the barrier layer compound. Appellant respectfully submits that Sekiguchi's use of the term "such as" in the above-mentioned phrase does not indicate that silicon is a metal. Rather, the term "such as" indicates that titanium is used as the metal because alternative metals, such as cobalt, are also disclosed in Sekiguchi. Therefore, the Examiner's reliance on Sekiguchi is misplaced because Sekiguchi does not disclose that a person of ordinary skill in the art would regard silicon as a metal.

Furthermore, as evidenced by the dictionary definitions of "silicon" provided by Appellant in a Supplemental Information Disclosure Statement filed on October 16, 2007, which has been made of record by the Examiner, a person of ordinary skill in the art would understand

that silicon is a nonmetallic element. The five dictionary definitions support Appellant's position that silicon is a nonmetallic element.

Since the meaning of the term "silicon" as asserted by the Examiner is not only inconsistent with the ordinary and customary meaning of this term, but is also inconsistent with Sekiguchi, Appellant respectfully submits that it is a clear error for the Examiner to assert that a person of ordinary skill in the art would consider silicon to be a metal.

Since Boleky does not describe, either expressly or inherently, each and every element of claim 1, Appellant respectfully requests that the Board reverses the 35 U.S.C. § 102(b) rejection of claim 1. Dependent claims 3 through 8 are allowable, *inter alia*, as depending from an allowable base claim.

Appellant respectfully submits that Boleky does not expressly or inherently describe each and every element of dependent claim 2 and does not render obvious claim 2, as explained on p. 5-6 of Appellant's Response. Therefore, Appellant respectfully requests that the Board reverses the 35 U.S.C. § 102(b) and the 35 U.S.C. § 103(a) rejections of claim 2.

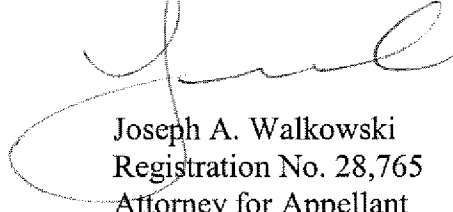
In summary, the Examiner appears to base the anticipation and obviousness rejections on a mischaracterization of silicon as a metal. In so doing, the Examiner overlooks the ordinary and customary meaning of the term "silicon" and the inconsistency of the Examiner's asserted meaning with other portions of Sekiguchi.

CONCLUSION

Appellant submits that the Examiner's rejections are clearly erroneous and that the Examiner has not satisfied the burden of setting forth a *prima facie* rejection of claims 1 through 8. Accordingly, Appellant respectfully requests that the rejections of claims 1 through 8 be reversed on the above-identified grounds.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Joe', with a large, sweeping loop at the end.

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